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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/586,282	06/02/2000	Jonathan S. Yedidia	MERL-1272	6465

7590 09/23/2004

Patent Department
Mitsubishi Electric Research Laboratories, Inc.
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EXAMINER

THANGAVELU, KANDASAMY

ART UNIT	PAPER NUMBER
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2123

DATE MAILED: 09/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/586,282

Applicant(s)

YEDIDIA ET AL.

Examiner

Kandasamy Thangavelu

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to the Applicants' Response mailed on June 9, 2004. Claim 1 was amended. Claims 1 and 3-15 of the application are pending. This office action is made non-final.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1 and 3-15 are rejected under 35 U.S.C. 101 because the claimed inventions are directed to non-statutory subject matter.

Independent claim 1 recites, "A method for determining probabilities of states of a system represented by a model including a plurality of nodes connected by links". The limitations recited in claim contain various abstract mathematical steps that are executed for determining probabilities of states of a system. The abstract mathematical steps are not statutory subject matter. To be statutory, the method comprising the steps included in the limitations should be implemented on a computer.

Independent claim 15 recites, "A method for determining probabilities of states of a system represented by a model including a plurality of nodes connected by links". The limitations recited in claim contain various abstract mathematical steps that are executed for determining probabilities of states of a system. The abstract mathematical steps are not statutory subject matter. To be statutory, the method comprising the steps included in the limitations should be implemented on a computer.

4. The claim rejections under 35 USC 101 can be overcome by amending the independent claims as "A computer implemented method for determining probabilities of states of a system represented by a model including a plurality of nodes connected by links ...".

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claim 1 and the specification of U.S. Patent No. 6,745,157. Although the conflicting claims are not identical, they are not patentably distinct from each other.

Claim 1 teaches A method for determining probabilities of states of a system represented by a model including a plurality of nodes connected by links, each node representing possible states of a corresponding part of the system, and each link representing statistical dependencies between possible states of related nodes, comprising:

~~grouping the plurality of nodes into arbitrary-sized clusters such that every node is~~
included in at least one cluster and each link is completely contained in at least one cluster;

identifying nodes in intersections of clusters, and intersections of intersections of clusters as regions of nodes;

Art Unit: 2123

defining messages based on the regions of nodes, each message having associated sets of source nodes and destination nodes and a value and a rule depending on other messages and selected links connecting the source nodes and destination nodes;

assigning initial values to the messages;

updating the value of each message using the associated rule; and

determining approximate probabilities of the states of the system from the messages when a termination condition is reached.

Claim 1 and the specification of the '157 patent teach:

A method for determining probabilities of states of a system represented by a model including a plurality of nodes connected by links, each node representing possible states of a corresponding part of the system, and each link representing statistical dependencies between possible states of related nodes (Claim 1, CL34, L30-35); comprising:

grouping the plurality of nodes into arbitrary-sized clusters such that every node is included in at least one cluster (Claim 1, CL34, L37-39; CL8, L42-44); and each link is completely contained in at least one cluster (Fig. 4b and 4c; CL8, L48-50);

identifying nodes in intersections of clusters, and intersections of intersections of clusters as regions of nodes (CL8, L54-60; CL8, L42-44);

defining messages based on the regions of nodes (CL12, L57-62; CL12, L66 to CL13, L15; CL14, L35-42); each message having associated sets of source nodes and destination nodes (CL19, L24-27; CL20, L5-7); and a value (CL13, L1-4) and a rule depending on other messages and selected links connecting the source nodes and destination nodes (CL13, L6-10);

Art Unit: 2123

assigning initial values to the messages (CL13, L1-2);
updating the value of each message using the associated rule (CL12, L64); and
determining approximate probabilities of the states of the system from the messages
when a termination condition is reached (CL12, L59-62; CL12, L63 to CL13, L1).

It would have been obvious to one of ordinary skill in the art to arrive at Claim 1 of the application from the elements of claim 1 and the specification of the '157 patent, since it requires only rearranging the limitations involved and paraphrasing them and adding some limitations taken from the description.

7. Claim 15 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claim 1 and the specification of U.S. Patent No. 6,745,157. Although the conflicting claims are not identical, they are not patentably distinct from each other.

Claim 15 teaches A method for determining probabilities of states of a system represented by a model including a plurality of nodes connected by links, each node representing possible states of a corresponding part of the system, and each link representing statistical dependencies between possible states of neighboring nodes, comprising:

grouping the plurality of nodes into arbitrary-sized clusters such that every node is included in at least one cluster, and each link is completely contained in at least one cluster;

identifying nodes in intersecting clusters, and intersections of intersecting clusters as regions, and intersections of regions as sub-regions;

Art Unit: 2123

discarding duplicate regions and sub-regions;

arranging the regions and sub-regions in a top-to-bottom hierarchy of intersections;

defining messages between regions and direct sub-regions directly connected in the hierarchy, each message having associated sets of source nodes and destination nodes and a value and a rule depending on other messages and selected links connecting the source nodes and destination nodes, the destination nodes being those nodes in the sub-region, and the source nodes being those nodes in the region and outside the sub-region;

assigning initial values to the messages;

updating the value of each message using the associated rule until a termination condition is reached;

determining approximate probabilities of the states of the system from the messages when a termination condition is reached.

Claim 1 and the specification of the '157 patent teach:

A method for determining probabilities of states of a system represented by a model including a plurality of nodes connected by links, each node representing possible states of a corresponding part of the system, and each link representing statistical dependencies between possible states of related nodes (Claim 1, CL34, L30-35); comprising:

grouping the plurality of nodes into arbitrary-sized clusters such that every node is included in at least one cluster (Claim 1, CL34, L37-39; CL8, L42-44); and each link is completely contained in at least one cluster (Fig. 4b and 4c; CL8, L48-50);

Art Unit: 2123

identifying nodes in intersections of clusters, and intersections of intersections of clusters as regions (CL8, L54-60; CL8, L42-44); and intersections of regions as sub-regions (CL8, L61-63);

discarding duplicate regions and sub-regions (CL9, L6-8);

arranging the regions and sub-regions in a top-to-bottom hierarchy of intersections (Fig. 7; CL19, L3-4);

defining messages between regions and direct sub-regions directly connected in the hierarchy (CL19, L3-6); each message having associated sets of source nodes and destination nodes (CL19, L24-27; CL20, L5-7); and a value (CL13, L1-4) and a rule depending on other messages and selected links connecting the source nodes and destination nodes (CL13, L6-10); the destination nodes being those nodes in the sub-region, and the source nodes being those nodes in the region and outside the sub-region (CL19, L24-27);

assigning initial values to the messages (CL13, L1-2);

updating the value of each message using the associated rule until a termination condition is reached (CL12, L64 to CL13, L1); and

determining approximate probabilities of the states of the system from the messages when a termination condition is reached (CL12, L59-62; CL12, L63 to CL13, L1).

It would have been obvious to one of ordinary skill in the art to arrive at Claim 15 of the application from the elements of claim 1 and the specification of the '157 patent, since it requires only rearranging the limitations involved and paraphrasing them and adding some limitations taken from the description.

8. Dependent claims 3-14 are rejected, because of their dependence on the rejected claim 1. Additionally, all the limitations of these claims can be derived from the dependent claims of the '157 patent.

Response to Arguments

9. Applicants' arguments filed on June 9, 2004 have been fully considered. The art rejections under 35 USC 103 (a) are withdrawn in response to the Applicants' arguments.

Conclusion

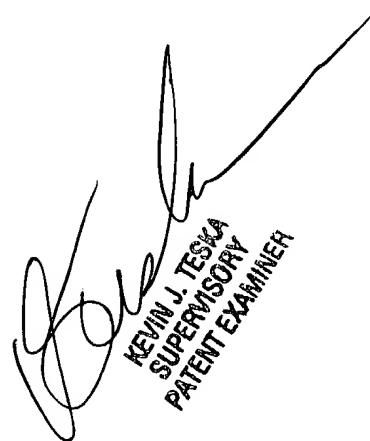
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 703-305-0043, till October 27, 2004 and 571-272-3717 after October 27, 2004. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska, can be reached on (703) 305-9704, till October 27, 2004 and 571-272-3716 after October 27, 2004. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2123

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

K. Thangavelu
Art Unit 2123
September 9, 2004



KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER